

McGraw-Hill Dictionary of Scientific and Technical Terms

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of geometric regularity. [MINERAL] See rock crystal.

crystal activity [ELECTR] A measure of the amplitude of a piezoelectric crystal plate under specified conditions. { 'krist-əl ak'tiv-əd-ē }

crystal acetate See cupric acetate. { 'krist-əl ē'rū-gō }

crystal audio receiver [ELECTR] Similar to the crystal-video receiver, except for the path detection bandwidth which is audio rather than video. { 'krist-əl 'od-ē-ō ri'sē-vər }

crystal axis [CRYSTAL] A reference axis used for the vectoral properties of a crystal. { 'krist-əl 'ak-səs }

crystal base [CRYSTAL] The contents of a primitive cell of a crystal. { 'krist-əl 'bās }

crystal blank [ELECTR] The result of the final cutting operation on a piezoelectric or semiconductor crystal. { 'krist-əl blānk }

crystal calibrator [ELECTR] A crystal-controlled oscillator used as a reference standard to check frequencies. { 'krist-əl kal-ibr-ay-tōr }

crystal cartridge [ENG ACOUS] A piezoelectric unit used with a stylus in a phonograph pickup to convert disk recordings into audio-frequency signals, or used with a diaphragm in a crystal microphone to convert sound waves into af signals. { 'krist-əl kar-trij } (af)

crystal chemistry [CRYSTAL] The study of the crystalline structure and properties of a mineral or other solid. { 'krist-əl kem-ist-rē }

crystal class [CRYSTAL] One of 32 categories of crystals according to the inversions, rotations about an axis, reflections, and combinations of these which leaves the crystal invariant. Also known as symmetry class. { 'krist-əl 'klas }

crystal clock [HOROL] A clock which uses the mechanical resonance of a crystal plate coupled piezoelectrically into an electronic circuit. { 'krist-əl klak } (electronic)

crystal control [ELECTR] Control of the frequency of an oscillator by means of a quartz crystal unit. { 'krist-əl kōn-trōl }

crystal-controlled oscillator [ELECTR] An oscillator whose frequency of operation is controlled by a crystal unit. { 'krist-əl kōn-trōld 'as-ō-lay-tōr }

crystal-controlled transmitter [ELECTR] A transmitter whose carrier frequency is directly controlled by the electro-mechanical characteristics of a quartz crystal unit. { 'krist-əl kōn-trōld 'trānz-mit-er }

crystal counter [NUCLEO] A particle detector in which the sensitive material is a dielectric (nonconducting) crystal mounted between two metallic electrodes. { 'krist-əl 'kaunt-er }

crystal current [ELECTR] The actual alternating current flowing through a crystal unit. { 'krist-əl kōr-ēnt }

crystal cutter [ENG ACOUS] A cutter in which the mechanical displacements of the recording stylus are derived from the deformations of a crystal having piezoelectric properties. { 'krist-əl kūt-er }

crystal defect [CRYSTAL] Any departure from crystal symmetry caused by free surfaces, disorder, impurities, vacancies and interstitials, dislocations, lattice vibrations, and grain boundaries. Also known as lattice defect. { 'krist-əl dē,fekt }

crystal detector [ELECTR] 1. A crystal diode, or an equivalent crystal cat whisker combination, used to rectify a modulated radio-frequency signal to obtain the audio or video signal directly. 2. A crystal diode used in a microwave receiver to combine an incoming radio-frequency signal with a local oscillator signal to produce an intermediate-frequency signal. { 'krist-əl dē'tekt-er }

crystal diffraction [SOLID STATE] Diffraction by a crystal of beams of x-rays, neutrons, or electrons whose wavelengths (or de Broglie wavelengths) are comparable with the interatomic spacing of the crystal. { 'krist-əl dī'frak-shən }

crystal diffraction spectrometer See Bragg spectrometer. { 'krist-əl dī'frak-shən spek'trām-əd-ər }

crystal diode See semiconductor diode. { 'krist-əl dī'ōd }

crystal dynamics See lattice dynamics. { 'krist-əl dā'nam-iks }

crystal face [CRYSTAL] One of the outward planar surfaces which define a crystal and reflect its internal structure. Also known as face. { 'krist-əl 'fās }

crystal field theory [PHYS CHEM] The theory which assumes the ligands of a coordination compound are the sources of negative charges which perturb the energy levels of the central metal ion and thus subject the metal ion to an electric field

analogous to that within an ionic crystalline lattice. { 'krist-əl 'fēld, thē-ō-rē }

crystal filter [ELECTR] A highly selective tuned circuit employing one or more quartz crystals; sometimes used in intermediate-frequency amplifiers of communication receivers to improve the selectivity. { 'krist-əl 'fīl-tər }

crystal form [CRYSTAL] A collection of crystal faces generated by operating on a single face with a subgroup of the symmetry elements of the crystal class. { 'krist-əl 'fōrm }

crystal glass [MATER] A water-clear lead glass which polishes readily and has a high index of refraction. { 'krist-əl 'glas }

crystal gliding [CRYSTAL] Slip along a crystal plane, due to plastic deformation; often produces crystal twins. Also known as translation gliding. { 'krist-əl glīd-īŋ }

crystal grating [SPECT] A diffraction grating for gamma rays or x-rays which uses the equally spaced lattice planes of a crystal. { 'krist-əl grād-īŋ }

crystal growth [CRYSTAL] The growth of a crystal, which involves diffusion of the molecules of the crystallizing substance to the surface of the crystal, diffusion of these molecules over the crystal surface to special sites on the surface, incorporation of molecules into the surface at these sites, and diffusion of heat away from the surface. { 'krist-əl grōth }

crystal habit [CRYSTAL] The size and shape of the crystals in a crystalline solid. Also known as habit. { 'krist-əl hāb-ət }

crystal harmonic generator [ELECTR] A type of crystal-controlled oscillator which produces an output rich in harmonics (overtones or multiples) of its fundamental frequency. { 'krist-əl hār'mā-nīk 'jen-ə-rād-ər }

crystal headphones [ENG ACOUS] Headphones using Rochelle salt or other crystal elements to convert audio-frequency signals into sound waves. Also known as ceramic earphones. { 'krist-əl hed'fōnz }

crystal holder [DES ENG] A housing designed to provide proper support, mechanical protection, and connections for a quartz crystal plate. { 'krist-əl hōl-dər }

crystal hydrophone [ENG ACOUS] A crystal microphone that responds to waterborne sound waves. { 'krist-əl hī'drə,fōn }

crystal indices See Miller indices. { 'krist-əl 'in-dē,sēz }

crystal laser [OPTICS] A laser that uses a pure crystal of ruby or other material for generating a coherent beam of output light. { 'krist-əl 'lā-zər }

crystal lattice [CRYSTAL] A lattice from which the structure of a crystal may be obtained by associating with every lattice point an assembly of atoms identical in composition, arrangement, and orientation. { 'krist-əl 'lad-əs }

crystal-lattice filter [ELECTR] A crystal filter that uses two matched pairs of series crystals and a higher-frequency matched pair of shunt or lattice crystals. { 'krist-əl 'lad-əs, fīl-tər }

crystalliferous bacteria [MICROBIO] *Bacillus thuringiensis* and related species characterized by the formation of a protein crystal in the sporangium at the time of spore formation. { 'krist-əl'if-ə-ras bāk'tirē-ə }

crystalline [CRYSTAL] Of, pertaining to, resembling, or composed of crystals. { 'krist-əl-lən }

crystalline alumina [MATER] An abrasive which consists of essentially the same mineral as corundum, but whose physical properties such as crystal structure, size, and shape of grain are so controlled as to produce the most desirable abrasives for specific types of grinding. { 'krist-əl-lən ə'lūm-ə-nə }

crystalline anisotropy [SOLID STATE] The tendency of crystals to have different properties in different directions; for example, a ferromagnet will spontaneously magnetize along certain crystallographic axes. { 'krist-əl-lən an-ə'sā-trō-pē }

crystalline chloral See chloral hydrate. { 'krist-əl-lən 'klōr-əl }

crystalline double refraction [OPTICS] The splitting which a wavefront experiences when a wave disturbance propagates through an anisotropic crystal. { 'krist-əl-lən 'dāb-əl rī'frak-shən }

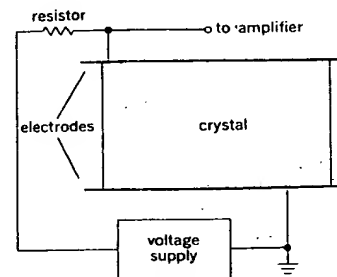
crystalline field [SOLID STATE] The internal electric field in a solid due to localized charges, especially ions, inside. { 'krist-əl-lən 'fēld }

crystalline fracture [MET] A break in a polycrystalline metal, with the fractured surface having a grainy appearance. { 'krist-əl-lən 'frak-chər }

crystalline frost [HYD] Hoarfrost that exhibits a relatively simple macroscopic crystalline structure. { 'krist-əl-lən 'frōst }

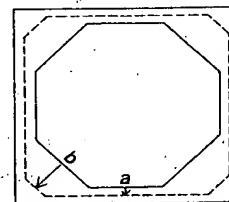
crystalline-granular texture [PETR] A primary texture of an

CRYSTAL COUNTER



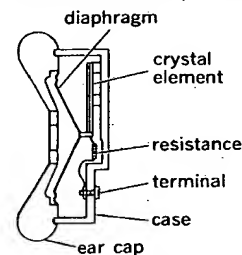
Circuit diagram of a crystal counter.

CRYSTAL GROWTH



Schematic representation of cross section of crystal at three stages of growth; a represents slower growing faces, b faster growing faces.

CRYSTAL HEADPHONES



Section through a crystal headphone.